

D38

Production of datasets of transnational interest

WP 4 - Cooperation among MS

MS-Med

Towards the operational implementation

of the MS-Med project in our common Mediterranean Sea



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Contents

Contents	4
Illustrations.....	5
Glossary	5
Introduction	6
1. Shom's data.....	8
1.1 In-house data process.....	8
1.1.1 BGDS Data inventory	9
1.1.2 From production to dissemination: cleaning the data	9
1.2 Objectives and steps set for MSPMED task 4.1.3.....	11
2. Identifying and collecting relevant data	11
2.1 Production and update of French data.....	12
2.2 French Data of interest to both MSP and security	12
2.3 French Data from external sources	13
2.4 Data from other EU members.....	13
3. Data sharing	15
2.1 Platform data.shom.fr	15
2.2 Thematic interactive portal.....	18
4. Conclusion	21
5. Annexes.....	23
Annex 1 : Data commissioning decision of LITTO3D® Maritime part - Corsica 2017-2018 layer (08/10/2021)	23
Annex 2 : Data commissioning decision of LITTO3D® Maritime part - Corsica 2017-2018 layer (13/10/2021)	24
Annex 3: Inventory table and status of data of interest for MSP & surveillance collected among partners	25

Illustrations

Figure 1 Data processing from production to dissemination.....	8
Figure 2: Visualization of dataset from Datashom.fr	16
Figure 3: visualization of Search and Rescue Area on Data.shom.fr (steps 1 and 2).....	16
Figure 4 : visualization of Search and Rescue Area onto Datashom (step 3)	17
Figure 5 : Search and Rescue Area related metadata visualization and download (step 4)	17
Figure 6 : Visualization of integration of the thematic portal onto MSPMED web page.....	20
Figure 8 Integration of Thematic portal on MEDOSMoSIS website	22
Figure 7 Integration of Thematic portal onto MSPMED website	22
Table 1 : Dataset of interest for MSP and surveillance and data status	14

Glossary

BDGS	Shom's geographic data database (<i>Base de données géographiques du Shom</i>)
Cerema	French Centre for Studies and Expertise on Risks, the Environment, Mobility and Urban Planning
DAM	Maritime Affairs Directorate
EMODnet	European Marine Observation and Data Network
EEZ	Exclusive Economic Zone
IHO	International Hydrographic Organisation
INSPIRE	Infrastructure for Spatial Information in Europe
MSP	Maritime Spatial Planning
OGC	Open Geospatial Consortium
TSS	Traffic Separation Scheme
SAR	Search & Rescue
*.shp	Shapefile format
SIMM	French Information System on Marine Environment (<i>Système d'Information sur le Milieu Marin</i>)
URI	Uniform Resource Identifier
WFS	Web Feature Service
WMS	Web Map Service
WG	Working group on Geoinformation for the sea and coast (<i>Groupe de travail Géo-informations pour la mer et le littoral</i>)
GIMEL	

Introduction

Maritime Spatial Planning (MSP) emerged worldwide as an important policy tool for planning the different uses of Seas and Oceans efficiently, in order to achieve both a sustainable development of the Blue economy and a long-lasting safeguarding of marine resources. MSP is also recognized as a useful tool to strengthen cross-border cooperation and to support improved ocean governance, in order to avoid different kinds of conflicts. Within the EU's marine waters, the Mediterranean Sea represent a very complex and delicate area, for both the presence of a large number of non-EU countries, the difficult geo-political situation in some hotspots, the intense maritime uses and the very differentiated environmental-marine characteristics.

The overarching objective of the MSP-MED project is to facilitate the MSP Directive's processes in the Member States facing the Mediterranean Sea, presently at different stages of implementation, by supporting the establishment of coherent and coordinated maritime spatial plans across the Mediterranean Region.

The MSP-MED project capitalizes the results of previous EU co-funded projects on MSP in the Med region, recently carried out and ongoing, and promotes an active participation of the EU and non-EU Mediterranean countries, in a pan-Mediterranean approach. The project will address specific issues regarding the national MSP implementation, tailored to the actual needs of each MS, and at the same time will implement activities at basin scale, enhancing cooperation and knowledge sharing, finally ensuring coherence among the MS' plans.

The overall objective of MSP-MED is to favor the Maritime Spatial Planning process in the Mediterranean Sea, by supporting the establishment of coherent and coordinated plans across the Mediterranean marine regions and between Member States, in line with the MSP Directive objectives. More specifically, the project intends to achieve the mentioned objectives through different core activities:

- 1. Support the work of the MSP competent authorities and/or inter-ministerial bodies in the establishment and adoption of maritime spatial plans (in line with article 6 and 8 of the MSP Directive).**
- 2. Support the development of relevant cross-border cooperation on MSP with bordering Member States and third countries with a view to ensure that maritime spatial plans are coherent and coordinated across marine regions concerned (in line with article 11 and 12 of the MSP Directive).**
- 3. Make use of the best available data and organise the sharing of information in an exhaustive way, necessary for maritime spatial plans, by using relevant mechanism and tools as INSPIRE and EMODNet (in line with article 10 of the MSP Directive).**

In the framework of the EMFAF MSP MED project (01/03/2020 - 31/10/2022), the present document describes the study and work carried out to produce a dataset first identified among French data as relevant from a cross-border perspective for the Mediterranean area as per the Grant Agreement N°887390 MSPMED detailed in *“4.1 Production of datasets of transnational interest concerning maritime security or surveillance, useful for maritime spatial planning (deliverable D38)”*

This document details the data identified as of interest at a transnational level for both maritime safety and surveillance and maritime spatial planning. The French dataset was in majority produced by Shom (French reference data provider) or gathered within Shom's database and complemented with other data collected from external providers. The associated metadata provide information on the platforms displaying the data that was sourced.

In a context of cooperation and interoperability, tests were carried out to make sure that the selected layers could be available and interrogated, when both imported or exported to partner platforms.

This document presents the main steps of the process followed by Shom to carry out this task:

- Part 1: presentation of Shom's production, update and gathering process prior to the publication of data
- Part 2: Identification of data of transnational interest, building of a dataset and inventory
- Part 2: Dissemination of the data gathered through geographic information platforms

1. Shom's data

One of the objectives of the WG GIMEL (*Groupe de travail Géo-informations pour la mer et le littoral*), Working group on Geoinformation for the sea and coast, and the SIMM (*Système d'Information sur le Milieu Marin*), Information System on Marine Environment, is to identify the source producer and owner of the reference data and to ensure that it is the sole official publisher of the data. This aims to limit the dissemination of obsolete data.

Some of the data of Shom's database BDGS (*Base de données géographiques du Shom*), such as tides, wrecks, underwater cables etc., constitutes data of reference for France on the marine environment. Shom is accountable for this data, its accuracy and publication.

Data of reference needs to be made accessible to the public.

Shom's BDGS also contains data for which the hydrographic service (Shom) is not the national referent. This data is not under Shom's responsibility, yet is necessary for cartographic or Defense purposes.

Finally, some data such as buoyage data is published by Shom under delegation from the Direction des Affaires Maritimes (DAM). In that case, once the DAM is able to publish this type of data, Shom will no longer be responsible for it.

1.1 In-house data process

The BDGS contains data belonging to different thematics (wrecks, markings, maritime delimitations, etc.), handled by different data managers depending on the field of expertise. The maintenance of the BDGS data goes through several stages: updating, database entry, validation. Before becoming accessible in the BDGS, the information needs to be processed and validated by a field data manager. The process is as shown in the figure below:

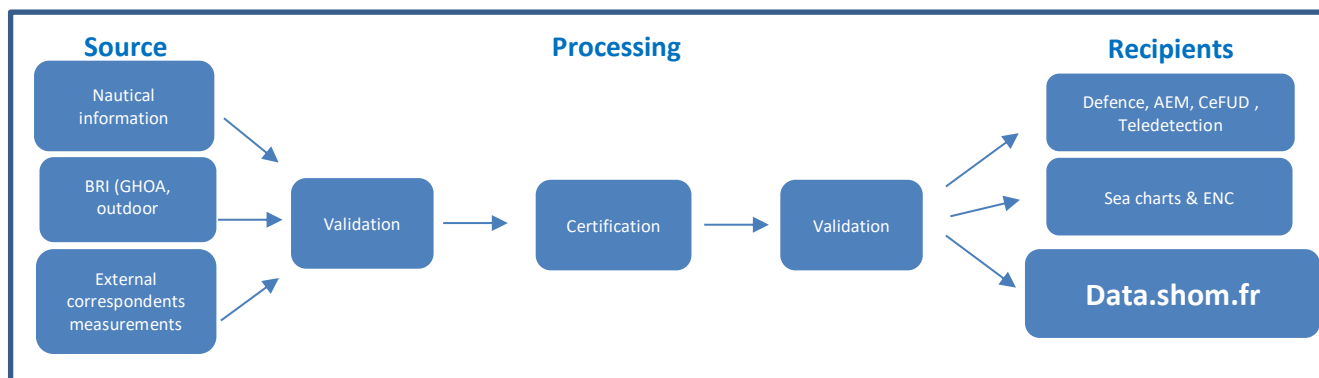


Figure 1 Data processing from production to dissemination

All the data contained in the BDGS is not necessarily published on Data Shom website. For example, only wrecks listed in the EEZ are made public and visible on the portal. Wrecks outside the EEZ are restricted (for Defence purposes) but stored in the BDGS (restricted database). They may however appear on nautical charts to ensure the safety of navigation.

1.1.1 BGDS Data inventory

To achieve its objective, Shom will carry out an inventory of all the data located in the BDGS and set up quality and completeness criteria for each theme:

- Quantitative inventory: is the data exhaustive (especially the reference data)? If not, how can it be completed?
- Qualitative inventory: is the data up to date and accurate (uniform and consistent)?
- Identification of the sources of the data and comparison with BDGS's content;
- Decrees in place;
- Data relevance

The National Portal of Maritime Limits also needs to be considered since the data displayed is not always up to date.

In the BDGS, the data is not always complete, whether geographically (e.g. can be found for the Atlantic but not the Mediterranean area) or in terms of attributes (not complete or not homogeneous).

The inventory will allow the data to be classified in the BDGS according to its quality, and completed when need be.

1.1.2 From production to dissemination: cleaning the data

After being produced, the data needs to be simplified / cleaned prior to be disseminated through data.shom.fr portal.

In the BDGS, the data is stored in the IHO S-57¹ format: the attributes are coded (acronyms, free text, etc.). Processing is required to make the data (its attributes) more understandable

¹ S-57 is the IHO- (International Hydrographic Organisation) standard for the exchange of digital hydrographic data

before publication on data.shom.fr. The attributes are renamed before publication: the code is replaced by a literal expression (then *.shp format for publication on data.shom.fr).

This processing is done directly and manually in the BDGS. The formatting of the data prior to its dissemination involves:

- Filtering of the data to be disseminated and of its attributes (relevance for users);
- Translation of the attributes coded in the BDGS in IHO S-57 format;
- The definition of the file format required for geographical visualization of the data.

The files used to carry out this processing are saved in SQL format. This format avoids using the shape format (SHP) for which text fields have a limited number of characters. The SQL files are held in directory files then sent to a data warehouse to be integrated into data.shom.fr.

Shom's department "Diffusion" carries out the formatting of the data to be disseminated as follows:

- Filing the data;
- Application of a geographical filter (e.g. wrecks that are not in the EEZ);
- Application of an attribute filter (not all the information related to the data is necessarily communicated; some attributes can be stored in the GSDB but not displayed in data.shom.fr);
- summary of information;
- Specifications for the content of external

The formatting carried out for Wrecks took into account the European INSPIRE directive.

The dissemination of the data can be divided in four steps:

- Delivery
- Generation
- Configuration/validation
- Visualisation.

With regards to metadata, the data producer provides various information such as editorial description, data genealogy and the names of partners having participated to its production. The metadata sheet is reformatted by the Diffusion Department according to the INSPIRE directive. A parent metadata record can be linked to one or more "daughter" metadata

records. The URIs (Uniform Resource Identifier) are not the same for parent and daughter data.

1.2 Objectives and steps set for MSPMED task 4.1.3

To comply with the task 4.1.3 Production of datasets of transnational interest, Shom defined and set the following objectives:

- Provide data related to MSP and maritime security & surveillance
- Publish the data on data.shom.fr
- Display some of the data onto the demonstrator light interactive and thematic portal

To do so, Shom's task were divided in 3 steps:

- identification of data in the BDGS relevant for the themes of MSP and security & surveillance
- Collection, update or production depending on the status of the data available
- Publication of identified data and automatization of publication (extraction from the BDGS and export to requested files for publication onto portals).

2. Identifying and collecting relevant data

To meet the requirement of a dataset of cross-border interest as per the Grant Agreement N°887390 MSPMED detailed in *"4.1 Production of datasets of transnational interest concerning maritime security or surveillance, useful for maritime spatial planning (deliverable D38)"*, Shom decided to proceed to an inventory in order to identify data available in France with layers potentially of interest for partners, in France and in their national area.

A list of several criteria was established to carry out the data selection:

- Data related to maritime surveillance, MSP and Environment
- Area of coverage focusing in the Mediterranean
- Data produced internally by Shom and by French and/or European partners. Going beyond internal production was relevant to gain a cross-border vision of the management of the maritime field.
- Layers available for visualization and download through web service format (WFS, WMS)

- Production and/or update of data through co-financing by MSP MED and the European Union (as illustrated by the examples of notices of data commissioning decisions in Annex 1 and 2).

2.1 Production and update of French data

According to the criteria listed in the above section, and following the inventory of Shom's data available in the BDGS, the following layers were identified as needing to be updated or produced:

- Submarine pipes and Cables
- Traffic separation Schemes
- Litto3D® maritime part Corsica
- Wrecks and obstructions
- marks at sea (buoys, beacons)
- sedimentology map 1/50 000"
- Regulation – Navigation' data including explosives dumping ground areas

The Traffic Separation Schemes, Litto 3D (completion of Cap Corse) and sedimentology maps 1/50000 constitute new layers.

2.2 French Data of interest to both MSP and security

Closely involved with surveillance and security and participating to the Mediterranean European project MEDOSMoSIS, Shom also identified datasets that were relevant for both Surveillance and MSP.

Information layers were sourced, gathered and where needed processed in order to be available through data.shom.fr.

- Maritime boundaries
- Search and rescue (SAR) zones
- Submarine pipes and cables listed by Shom
- LITTO3D® Maritime part Provence- Alpes-Côte d'Azur 2014
- LITTO3D® Maritime part Languedoc Roussillon 2014-2015
- LITTO3D® PACA 2015
- LITTO3D® Languedoc Roussillon 2009
- Bathymetric DTM of the Gulf of Lion - Côte d'Azur coastline (Homonim project)

- Bathymetric DTM of the Corsican coastline (Homonim project)
- 500,000 scale sediment data
- Global sediment map
- Numerical sea state model
- Numerical weather forecasting model
- 2D hydrodynamic model of water levels and surges
- 3D hydrodynamic model of ocean evolution

2.3 French Data from external sources

Additional layers were harvested from external sources as reference providers:

- National Plans (Intermediary - Source: Geolittoral)
- Mean_atlas_land EU (from Emodnet)
- Natura2000areas EU (from Emodnet)
- Vessel density of the year 2020 (from Emodnet)

2.4 Data from other EU members

To further illustrate the transborder perspective and interest of the task, the identification and collection of the various layers listed by Shom was shared into a table organizing them by categories following concertation with MSPMED Italian partner CNR, in charge of the Task 3.1 *Building and sharing a common knowledge catalogue*.

This table was shared with partners from MSPMED project in order to enhance the dataset by collecting corresponding data information for each MSP MED partner country.

The table was completed with the collected information, and Table 1 shows the status and availability of the data collected for each country and each category.

Table 1 : Dataset of interest for MSP and surveillance and data status

Category	Sub-category	France	Greece	Italy	Malta	Slovenia	Spain
Maritime boundaries	Geopolitical boundaries (legal status)						
	Physiographic boundaries						
Physical characteristics	Bathymetry						
	Oceanographic parameters						
	Sedimentology						
	Underwater noise						
Maritime transport and traffic flows	Governance and planning						
	Maritime routes and areas						
Ports	Governance and planning						
Nature and species conservation sites & protected areas	Natura 2000 sites (marine and coastal)						
	National Protected Areas (marine and coastal)						
	Sub-national protected areas (marine and coastal)						
Submarine cable & pipeline routes	Telecommunication						
	High Voltage Cables						
	Pipelines						
Spatial policy	National coastal and marine planning						
	Sub-national coastal and marine planning						
Forecast	Weather						
	Sea state						
	water levels						
	Others						
Surveillance and security	SAR Zones						
	Obstructions and wrecks						
	Beaconing						

Legend

Available

Available soon

Restricted

Unofficial

Not available

Do not know

The table providing the full detailed inventory and links providing access to the layers information (metadata) when available has been added to this report in **Annex 3**.

This work represents an opportunity to establish a picture of datasets of cross-border interest and their status in the framework of MSP MED. The data status identified as relevant was gathered and listed in table 1 below.

3. Data sharing

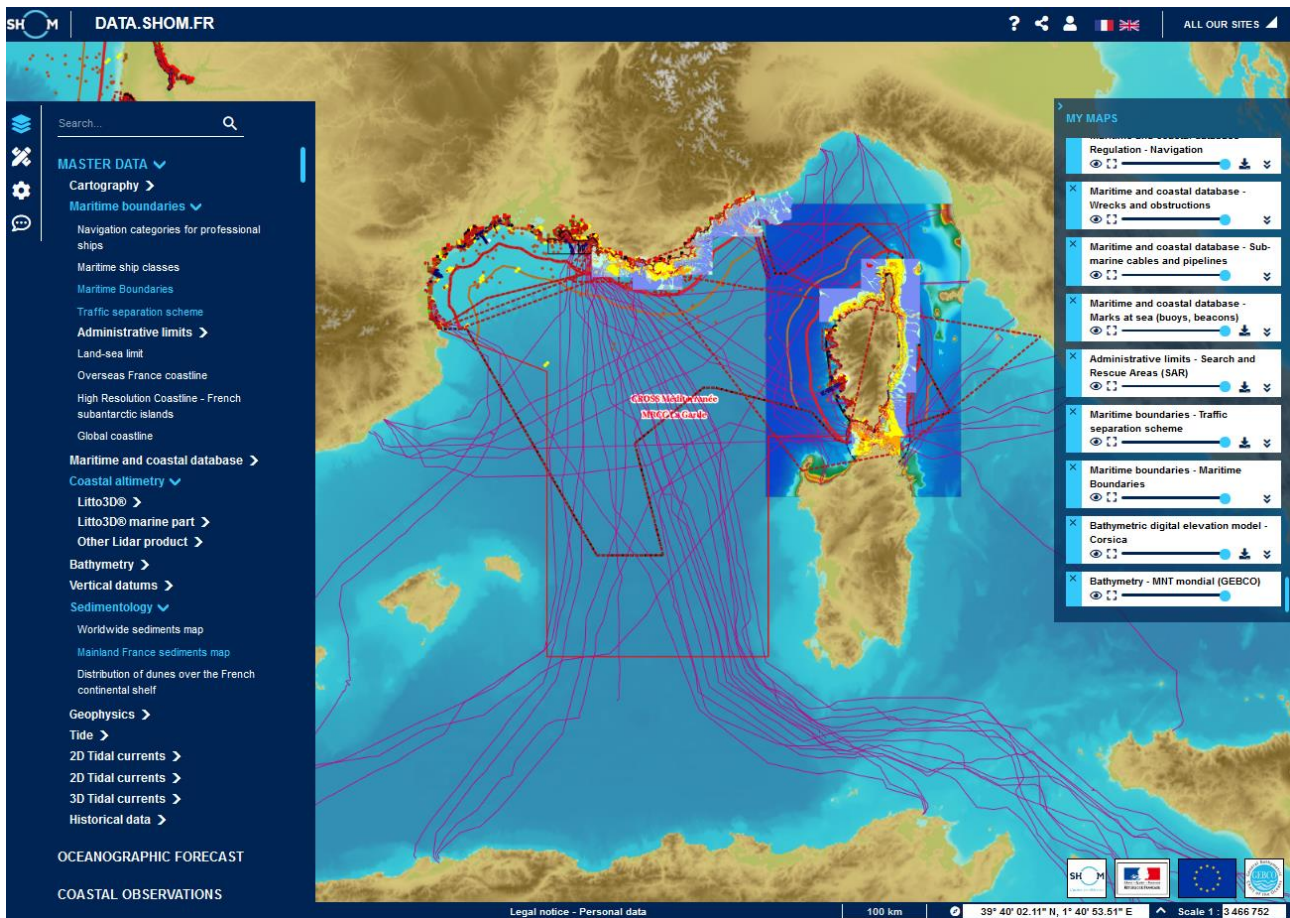
2.1 Platform data.shom.fr

All the data produced by Shom is available through the platform [datashom.fr](https://data.shom.fr).

Following recent developments to improve interoperability, the platform is available in English and French, and enables the visualization and download of layers as well as access to associated information (metadata). The layers produced by Shom are available in several formats including shapefiles and web services WMS/WFS (in accordance with to OGC and INSPIRE standards).

Data.shom.fr website's layers can be downloaded from other platforms and the related information (metadata) remains accessible when doing so.

Figure 2: Visualization of dataset from Datashom.fr



Easy access to data as per the steps described below:

Figure 3: visualization of Search and Rescue Area on Data.shom.fr (steps 1 and 2)



Figure 4 : visualization of Search and Rescue Area onto Datashom (step 3)

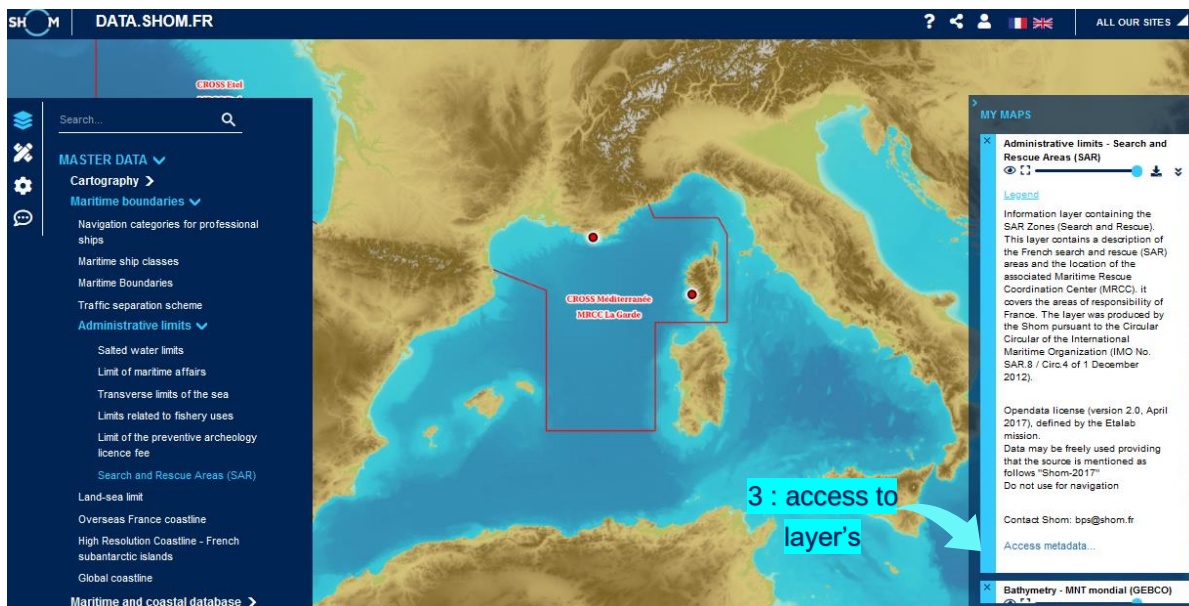
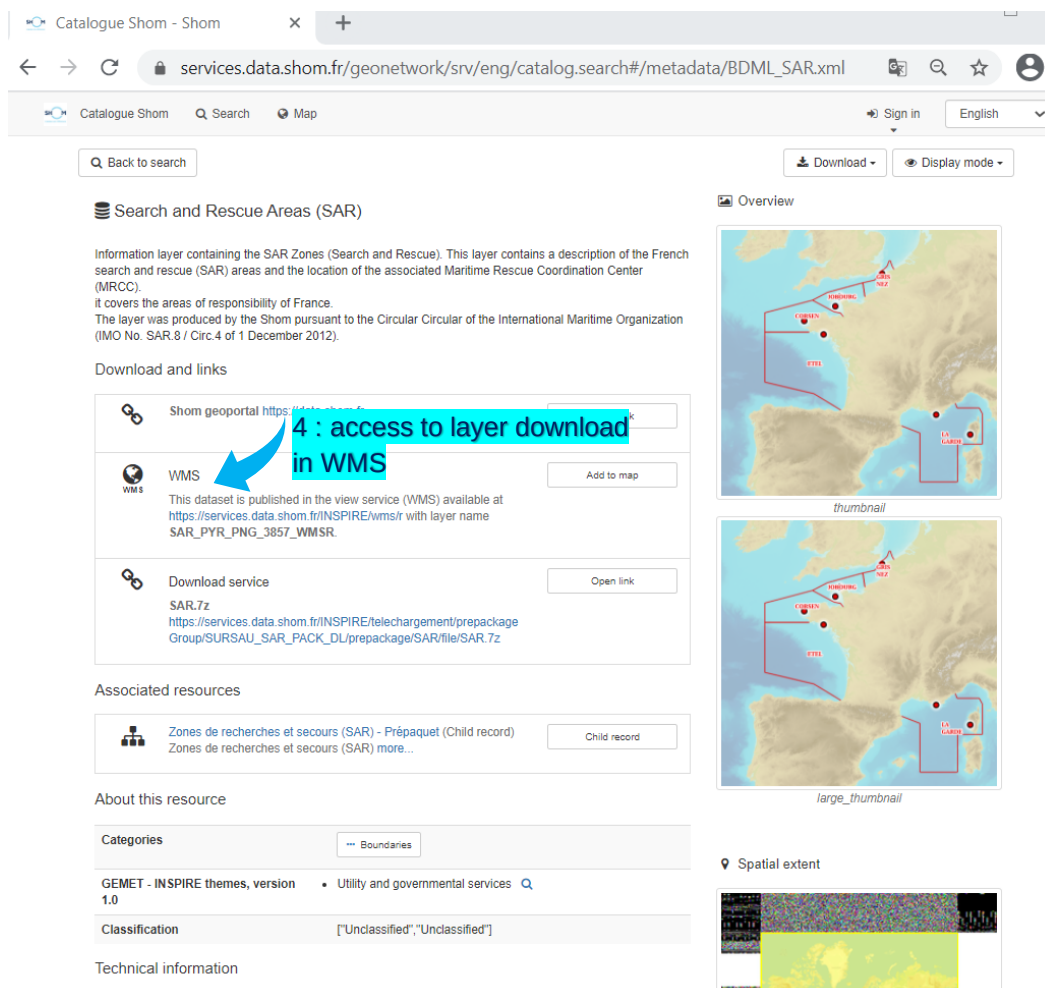


Figure 5 : Search and Rescue Area related metadata visualization and download (step 4)



The portal's administration however showed it could at times be tedious to handle. Indeed, the data available is so exhaustive that it can result challenging for the viewer to find specific information. In order to target specific thematic information, a variation of data.shom.fr was therefore developed.

2.2 Thematic interactive portal

Under the task 3.4.1 *Mediterranean sea basin strategy documents limits publication for the Sea Basin Strategy entry into force in France* (Deliverable D32), the “*development of a Web tool allowing at the same time a reliable identification of the areas, and the access to the prescriptions and recommendations associated*”, was requested. An interoperable web tool therefore was developed by Shom as demonstrator in order to improve the use and visibility of data of interest at the Mediterranean level, and to enable a cross-analysis with information related to European maritime planning, surveillance and environment.

This demonstrator enables:

- **Source identification and main information available**

The integrated data comes with access to description, legend, metadata allowing 1) identification of the data producer and 2) data download whenever possible. Data related to vocation areas was particularly carefully handled since, in addition to the main information that can be interrogated, access is given to prescriptions and recommendations for each vocation area.

- **Easy access to data, prescriptions and associated recommendations**

The portal can be declined according to the identified topic. In the study carried out in WP3.4.1 (Deliverable D32), data was related to national plans resulting from the application of the MSP directive (e.g: vocation zones) and supporting data that led to the realization of the plans (e.g: Natura 2000 zones).

Data sourced either internally from Shom's database or externally, with for example national plans from Spanish MSP, can be integrated. In a European context and in the interest of the portal's interoperability, external data sources are necessary. They also make the portal more attractive.

The data formats expected are web service formats such as WFS, WMS, WMTS. The access to a data issued directly by the data producers and updated automatically is therefore possible.

- Use of resources hosted on web platform

New data in Web Service format can easily be added to the portal and inserted in the web page by a code line.

As an example, in the study in the study carried out in WP3.4.1 (Deliverable D32), it was considered that the portal would appear on the French national portal of maritime limits (<https://maritimelimits.gouv.fr/>) and Shom's MSP editorial website.

To highlight the interactions between MSP and maritime surveillance and to showcase interoperability among the data from different member states, two use cases were chosen:

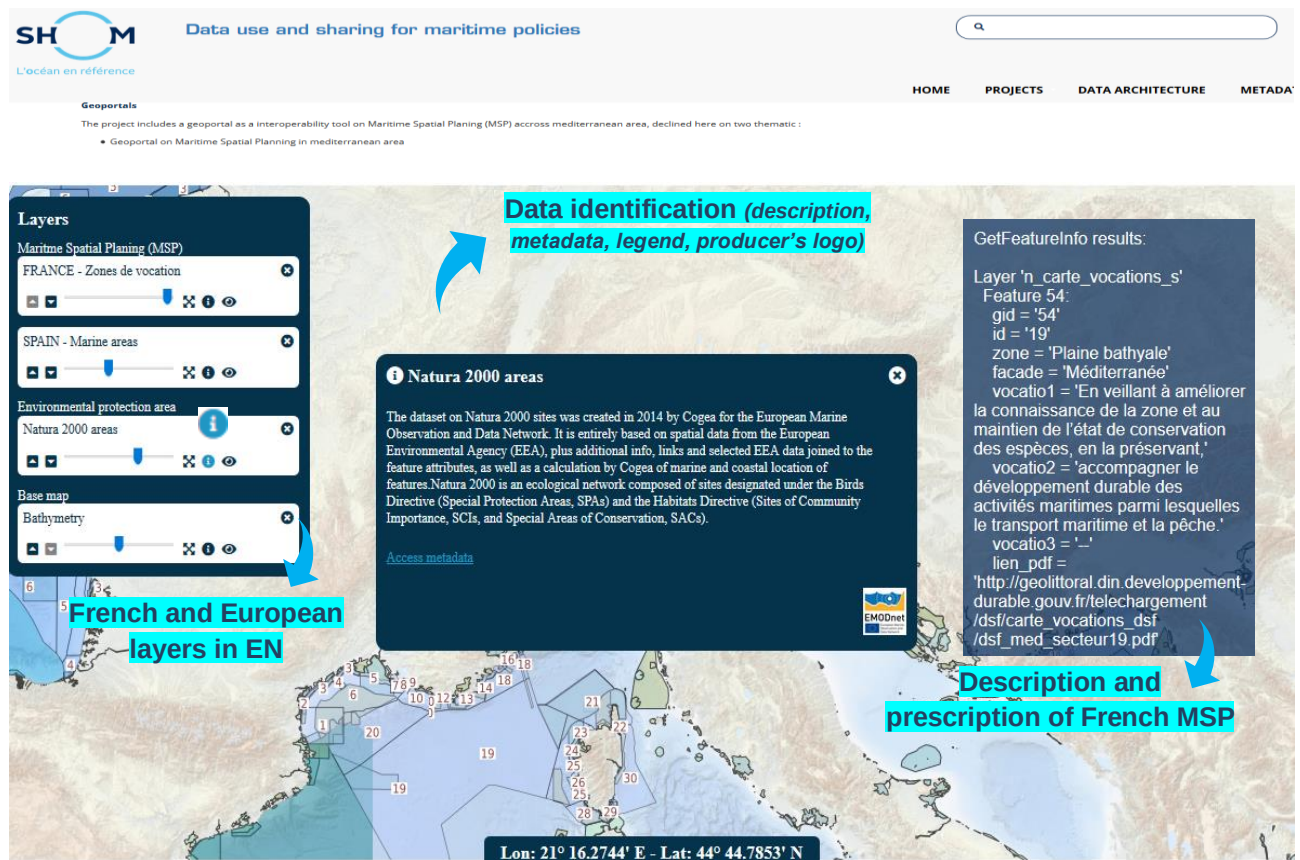
Use case n°1: Description of protected ecosystem zones for MSP

- Description: A knowledge of protected ecosystem areas is essential for planning activities at sea in order to respect boundaries, avoid constraint on ecosystems and to ensure their protection.
- Information displayed:
 - French MSP process
 - Spain MSP process
 - Italian MSP process (soon)
 - EMODnet Natura 2000 area
 - EMODnet Bathymetry: basemap

Use case n°2: Description of restricted traffic areas and search and rescue (SAR) areas

- Description: Awareness of traffic separation schemes (TSS) and search and rescue (SAR) zones in order to prevent and anticipate possible incidents in poor weather conditions.
- Information displayed :
 - Weather forecasts: surface currents in the Mediterranean
 - French maritime traffic separation schemes
 - Spain maritime traffic separation schemes (available soon)
 - Italian vessel traffic separation schemes (available soon)
 - French search and rescue (SAR) zones
 - Spain search and rescue (SAR) zones (available soon)
 - Italian search and rescue (SAR) zones (available soon)
 - EMODnet Bathymetry: basemap

Figure 6 : Visualization of integration of the thematic portal onto MSPMED web page



4. Conclusion

The study demonstrated that data relevant to both MSP and maritime surveillance as well as to environment could be gathered among partners, and therefore constitutes a stepping stone for the building of a broader and stronger dataset of interest from both cross border and cross-sectorial perspectives. The exercise illustrated that once the list of layers is identified, it makes it easier for a European partner to add to the dataset with similar national information.

Shom intends to keep collecting and gathering information from its European partners wherever possible in order to complete an already growing dataset, and to share it with its European counterparts in the framework of both Mediterranean projects MSPMED and MEDOSMoSIS. In this extent, Shoms works closely with the CNR (Italy), in charge of gathering and building under task 3.1 a common knowledge catalogue. The sharing of the information identified, collected or produced by Shom particularly feeds the common MSP knowledge catalogue of metadata for the collection and sharing of MSP-relevant information for the Mediterranean Sea (task 3.1.2).

The objective of producing this dataset was also to enable a cross analysis of the information gathered from different Mediterranean sources. With regards to access to data, the various platforms on which the data is displayed enable easy access and large dissemination. This constitutes a key tool for the support of the maritime spatial planning's process. Some obstacles to interoperability and cooperation between MS, such as language, data format or availability of data (identified and described in the *MS10 report on Interactions and sharing of data on Maritime Spatial Planning and Maritime Security and Surveillance in the Mediterranean area*) were tackled by Shom: major improvements were carried out on the French Hydrographic Service's platform since the beginning of the MSPMED project to address these limitations, leading to a much easier dissemination of the French data at a EU level.

The cross analysis of specific data of interest, and the highlight of cross border interaction also have proven to be easier with the development of a lighter interface enabling to target a limited number of layers. The development of the thematic demonstrator portal dedicated to MSP provides a direct access to vocation zones areas and related information, and enables a cross analysis with any type of information as long as the format required by the web tool is used. The development of another thematic portal dedicated to maritime surveillance can enable authorities from different states to access, share and compare data mostly relevant to their activities.

The two interactive portals developed so far, highlighting specific layers of interest in the Mediterranean, were successfully integrated respectively on the web pages of the MSPMED and MED OSMoSiS² projects (as illustrated below) therefore providing a relevant visual illustration of the topics dealt with.

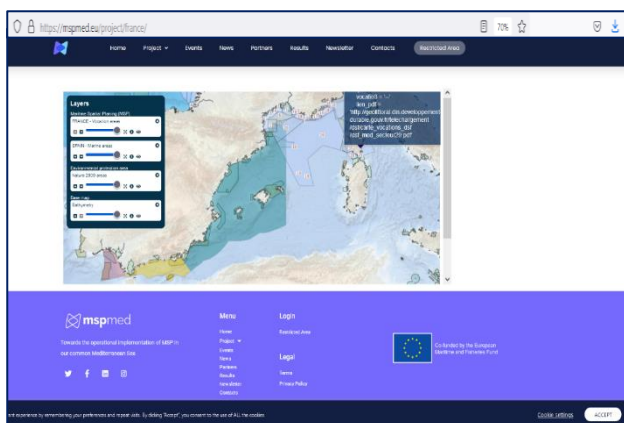


Figure 8 Integration of Thematic portal onto MSPMED website

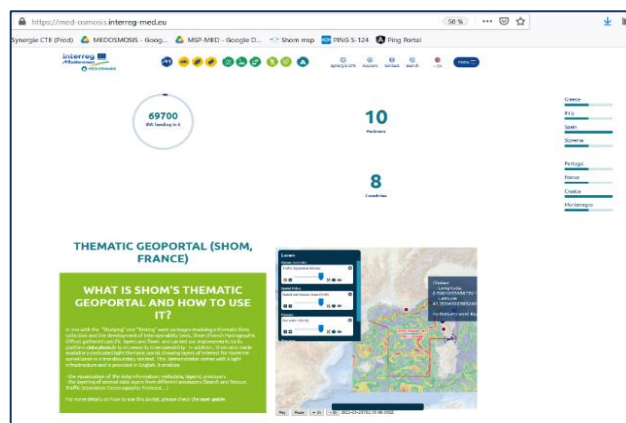


Figure 7 Integration of Thematic portal on MED OSMoSiS website

Shom would like if possible within the remaining project's duration to have the opportunity to produce 2 or 3 additional variations of these cross-border interactive tools, in concertation with MSPMED partners. A cooperation between partners to define layers of common interest could indeed enable to highlight and compare further the interactions and interrelations of European members in the Mediterranean area, according to specific topics.

Shom also supports fully the sharing of data by all partners and EU members through Emodnet, the European Marine Observation and Data Network.

² MED OSMoSiS : The MED OSMoSiS project is an ongoing European project co-financed by the ERDF and dedicated to maritime surveillance and Safety in the Mediterranean

5. Annexes

Annex 1 : Data commissioning decision of LITTO3D® Maritime part - Corsica 2017-2018 layer (08/10/2021)



Direction des opérations, de la production
et des services

BREST, le 8 octobre 2021
N° 1435 Shom/DOPS/DMS/NP

DECISION DE MISE EN SERVICE

OBJET : Publication

Je décide la diffusion du produit numérique suivant auxquels sont attribués les caractères et destinations énoncés ci-après :

- Titre du produit : Partie maritime Litto3D® – Corse 2017-2018

Précisions techniques :

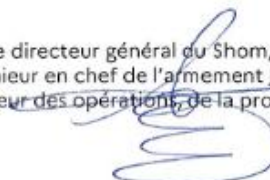
- Produit provenant de données acquises par lidars topo-bathymétrique et bathymétrique aéroportés dans le cadre de l'opération « Risques côtiers – LITTO3D® Corse ».
- Référence de la décision de mise en service du portail data.shom.fr à partir duquel les services sont disponibles : n° 165 Shom/DOPS/DMS/NP du 26 mai 2021.

Règles de diffusion :

- | | | |
|---|---|-------------------------------|
| - Numéro de nomenclature | : | néant |
| - Degré de protection | : | NP |
| - Indice de prix | : | gratuit (licence ouverte) |
| - Inscription au catalogue 4A | : | non ... du catalogue 4W : non |
| - Inscription au répertoire | : | oui |
| - Introduction au recueil réglementaire | : | non |
| - data.shom.fr | : | oui |
| - diffusion.shom.fr | : | oui |

Cette décision ne sera pas annoncée dans le Groupe d'Avis aux Navigateurs.

Pour le directeur général du Shom,
l'ingénieur en chef de l'armement Jean-Claude Le Gac,
directeur des opérations, de la production et des services



Shom – 13, rue du Chatellier – CS 92803 – 29228 Brest CEDEX 2
BRM – Shom – CC08 – 29240 Brest CEDEX 9
Dossier suivi : DOPS/STM/AL
www.shom.fr

Annex 2 : Data commissioning decision of LITTO3D® Maritime part - Corsica 2017-2018 layer (13/10/2021)



Direction des opérations, de la production
et des services

BREST, le 13 octobre 2021
N° 440 Shom/DOPS/DMS/NP

DECISION DE MISE EN SERVICE

OBJET : Edition – retrait

Je décide la diffusion du produit numérique suivant auquel sont attribués les caractères et destinations énoncés ci-après :

- Titre du produit : Dispositifs de séparation du trafic – Édition octobre 2021

Précisions techniques :

- Descriptif de contenu du produit « Dispositifs de séparation du trafic » : NR2021-009
- Mode opératoire de réalisation du produit : MO2021-015
- Référence de la décision de mise en service du système de production :
 - ✓ Système « CARIS HPD v3.2.7 » : n° 65 Shom/DOPS/MIP/GEO/NP du 22/09/2017
 - ✓ Système « QGIS » v3.10.7
- Référence de la décision de mise en service du portail data.shom.fr à partir duquel les services sont disponibles : n° 165 Shom/DOPS/DMS/NP du 26 mai 2021.

Règles de diffusion :

- Numéro de nomenclature : néant
- Degré de protection : NP
- Indice de prix : gratuit (licence ouverte)
- Inscription au catalogue 4A : non ... du catalogue 4W : non
- Inscription au répertoire : oui
- Introduction au recueil réglementaire : non
- data.shom.fr : oui
- diffusion.shom.fr : oui
- limitesmaritimes.gouv.fr : oui
- Version antérieure de février 2021, à retirer du service.

Cette décision ne sera pas annoncée dans le Groupe d'Avis aux Navigateurs.

Pour le directeur général du Shom,
l'ingénieur en chef de l'armement Jean-Claude Le Gac,
directeur des opérations, de la production et des services

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Annex 3: Inventory table and status of data of interest for MSP & surveillance collected among partners

Country	Category	Sub-category	Resource title	Owner	Publication	Metadata/Information link	Comments/notes
France	Maritime boundaries	Geopolitical boundaries (legal status)	Maritime limits and boundaries	SHOM	2022-02-10	https://services.data.shom.fr/geonetwork/srv/en/catalog.search#/metadata/BDML_DELMAR.xml	
France		Physiographic boundaries	Land-sea limit - Metropolitan France	SHOM	2022-01	https://services.data.shom.fr/geonetwork/srv/eng/catalog.search#/metadata/BDML_LIMIT_M_France_metropolitaine.xml	
France	Physical characteristics	Bathymetry	LITTO3D® Maritime part Provence- Alpes-Côte d'Azur 2014	SHOM	2014-11-21	https://services.data.shom.fr/geonetwork/srv/en/catalog.search#/metadata/BATHYMETRIE_L3D_MAR_PACA_2014.xml	
France		Bathymetry	LITTO3D® Maritime part Languedoc Roussillon 2014-2015	SHOM	2016-03-26	https://services.data.shom.fr/geonetwork/srv/en/catalog.search#/metadata/BATHYMETRIE_L3D_MAR_LR_2014_2015.xml	
France		Bathymetry	LITTO3D® Maritime part - Corsica 2017-2018	SHOM	2021-09-10	https://services.data.shom.fr/geonetwork/srv/en/catalog.search#/metadata/BATHYMETRIE_L3D_MAR_CORSE_2017_2018.xml	
France		Bathymetry	LITTO3D® PACA 2015	SHOM	2015-01-28	https://services.data.shom.fr/geonetwork/srv/fr/catalog.search#/metadata/BATHYMETRIE_LITTO3D_PACA_2015.xml	
France		Bathymetry	LITTO3D® Languedoc Roussillon 2009	SHOM	2013-08-02	https://services.data.shom.fr/geonetwork/srv/en/catalog.search#/metadata/BATHYMETRIE_LITTO3D_LR_2009.xml	
France		Bathymetry	Bathymetric DTM of the Gulf of Lion - Côte d'Azur coastline (Homonim project)	SHOM	2015-09-11	https://services.data.shom.fr/geonetwork/srv/en/catalog.search#/metadata/MNT_MED100m_GDL_CA_HOMONIM_WGS84.xml	
France		Bathymetry	Bathymetric DTM of the Corsican coastline (Homonim project)	SHOM	2015-09-10	https://services.data.shom.fr/geonetwork/srv/en/catalog.search#/metadata/MNT_MED100m_CORSE_HOMONIM_WGS84.xml	
France		Sedimentology	500,000 scale sediment data	SHOM	2010-12-31	https://services.data.shom.fr/geonetwork/srv/en/catalog.search#/metadata/HOM_GEOL_NATURES_FOND_500.xml	
France		Sedimentology	50 000 scale sediment data	SHOM	2016-04-27	https://services.data.shom.fr/geonetwork/srv/en/catalog.search#/metadata/HOM_GEOL_NATURES_FOND_50.xml	
France		Sedimentology	Global sediment map	SHOM	2021-05-06	https://services.data.shom.fr/geonetwork/srv/en/catalog.search#/metadata/HOM_GEOL_SEDIM_MONDIALE.xml	
France	Maritime transport and traffic flows	Governance and planning	Regulation - Navigation	SHOM	2021-07-21	https://services.data.shom.fr/geonetwork/srv/en/catalog.search#/metadata/BDML_REGLEMENTATION_NAVIGATION.xml	

France		Maritime routes and areas	Dispositifs de séparation du trafic (Traffic separation schemes)	SHOM	2021-10-13	https://services.data.shom.fr/geonetwork/srv/en/catalog.search#/metadata/BDML_DST.xml	
France	Ports	Governance and planning	Informations portuaires	SHOM	2021-06-16	https://services.data.shom.fr/geonetwork/srv/fr/catalog.search#/metadata/BDML_PORTS.xml	
France	Nature and species conservation sites & protected areas	Natura 2000 sites (marine and coastal)	Zone Natura 2000	INPN	2021-12	https://inpn.mnhn.fr/telechargement/cartes-et-information-geographique/nat/natura	
France	Submarine cable & pipeline routes	Telecommunication	Sub-marine cables and pipelines listed by Shom	SHOM	2019-01-07	https://services.data.shom.fr/geonetwork/srv/en/catalog.search#/metadata/BDML_CABLES.xml	
France		High Voltage Cables	Sub-marine cables and pipelines listed by Shom	SHOM	2019-01-08	https://services.data.shom.fr/geonetwork/srv/en/catalog.search#/metadata/BDML_CABLES.xml	
France		Pipelines	Sub-marine cables and pipelines listed by Shom	SHOM	2019-01-09	https://services.data.shom.fr/geonetwork/srv/en/catalog.search#/metadata/BDML_CABLES.xml	
France	Spatial policy	National coastal and marine planning	National Plans	Geolittoral	2020-13-20	https://www.geocatalogue.fr/Detail.do?fileId=da2a175d-c5ba-444f-94f7-bd5a1cc44520	
France	Forecast	Weather	Modèle numérique de prévisions météorologiques (Numerical weather forecasting model)	SHOM	Daily update	https://services.data.shom.fr/geonetwork/srv/en/catalog.search#/metadata/OCEANO_MODELE_METEO.xml	
France		Sea state/waves	Modèle numérique de représentation des états de mer (Numerical sea state model)	SHOM	Daily update	https://services.data.shom.fr/geonetwork/srv/en/catalog.search#/metadata/OCEANO_MODELE_VAGUES.xml	
France		water levels	Modèle hydrodynamique 2D de niveaux d'eau et surcotes (2D hydrodynamic model of water levels and surges)	SHOM	Daily update	https://services.data.shom.fr/geonetwork/srv/en/catalog.search#/metadata/OCEANO_MODELE_NIVEAUX.xml	
France		Others	Modèle hydrodynamique 3D d'évolution de l'océan (3D hydrodynamic model of ocean evolution)	SHOM	Daily update	https://services.data.shom.fr/geonetwork/srv/en/catalog.search#/metadata/OCEANO_MODELE_HYDRODYN.xml	
France	Surveillance and security	SAR Zones	Search and Rescue Areas (SAR)	SHOM	2019-10-25	https://services.data.shom.fr/geonetwork/srv/en/catalog.search#/metadata/BDML_SAR.xml	
France		Obstructions and wrecks	Epaves et obstructions répertoriées par le Shom	SHOM	2022-03-01	https://services.data.shom.fr/geonetwork/srv/fr/catalog.search#/metadata/BDML_EPAVES.xml	
France		Beaconing	Balisage répertoriés par le Shom et la DAM	SHOM	2019-03-01	https://services.data.shom.fr/geonetwork/srv/en/catalog.search#/metadata/BDML_BALISAGE.xml	
Greece	Maritime boundaries	Physiographic boundaries	Coastline		2015-11-04	https://geodata.gov.gr/en/dataset/aktogramme	

Greece	<i>Nature and species conservation sites & protected areas</i>	Natura 2000 sites (marine and coastal)	NATURA 2000 Protected Areas		2020-08-10	http://geoportal.yopen.gr/geonetwork/srv/eng/catalog.search#/metadata/c140c8d2-3820-4847-bfdc-1d6668d66325	
Greece		Natura 2000 sites (marine and coastal)	NATURA 2000 Protected Areas		2020-11-24	http://mapsportal.yopen.gr/maps/826	
Greece		National Protected Areas (marine and coastal)	Protected Areas according to the National Legislation		2020-11-24	http://mapsportal.yopen.gr/maps/683#more	
Malta		Natura 2000 sites (marine and coastal)	Protected Areas - International Level	Environment and Resource Authority	2019	https://meps.eraportal.org.mt/	
Malta		National Protected Areas (marine and coastal)	Protected Areas - National Level	Environment and Resource Authority	2019	https://meps.eraportal.org.mt/	
Malta	<i>Maritime boundaries</i>	Geopolitical boundaries (legal status)	Designations	Continental Shelf Department		https://meps.eraportal.org.mt/	
Malta	<i>Spatial policy</i>	National coastal and marine planning	Coastal and Marine Policies	Planning Authority	2015	https://pamapserver.pa.org.mt/	
Malta	<i>Submarine cable & pipeline routes</i>	Telecommunication	Existing Marine Infrastructure/Uses - Areas	Planning Authority	2015	https://pamapserver.pa.org.mt/	
Malta		High Voltage Cables	Existing Marine Infrastructure/Uses - Areas	Planning Authority	2015	https://pamapserver.pa.org.mt/	
Italy	<i>Maritime boundaries</i>	Geopolitical boundaries (legal status)	Maritime limits and boundaries	Italian Navy Hydrographic Office (IIM)		https://www.sid.mit.gov.it	The layers are currently restricted. Available soon through the SID portal.
Italy	<i>Ports</i>	Governance and planning	Cruise and commercial ports	EUROSTAT	2015	https://www.sid.mit.gov.it	The layers are currently restricted. Available soon through the SID portal.
Italy	<i>Spatial policy</i>	National coastal and marine planning	Planning units of the Italian MSP plan	Ministry of infrastructures and sustainable mobility (MIMS)	2022	https://www.sid.mit.gov.it	The layers are currently restricted. Available soon through the SID portal.
Italy		Sub-national coastal and marine planning	Planning units of the Italian MSP plan	Ministry of infrastructures and sustainable mobility (MIMS)	2022	https://www.sid.mit.gov.it	The layers are currently restricted. Available soon through the SID portal.
Italy	<i>Submarine cable & pipeline routes</i>		Powerlines from TERNA	General Command of the Port Authority Corps - Coast Guard		https://www.sid.mit.gov.it	The layers are currently restricted. Available soon through the SID portal.
Italy	<i>Nature and species conservation sites & protected areas</i>	Natura 2000 sites (marine and coastal)	Natura 2000 sites	Ministry for the ecological transition - MiTE	2021	https://www.sid.mit.gov.it	The layers are currently restricted. Available soon through the SID portal.

Italy	Physical characteristics	Bathymetry	EMODnet DTM for European sea regions	EMODnet	12-2020	https://www.emodnet-bathymetry.eu/data-products	It is a European-wide dataset not specifically produced or focused on Italy.
Italy	Maritime transport and traffic flows	Maritime routes and areas	Maritime traffic intensity	EMSA		https://www.sid.mit.gov.it	The layers are currently restricted. Available soon through the SID portal.
Italy	Nature and species conservation sites & protected areas	National Protected Areas (marine and coastal)	Protected natural areas/Marine natural areas and reserves	Ministry for the ecological transition - MiTE		https://www.sid.mit.gov.it	The layers are currently restricted. Available soon through the SID portal.
Italy		Sub-national protected areas (marine and coastal)	Protected natural areas/Marine natural areas and reserves	Ministry for the ecological transition - MiTE		https://www.sid.mit.gov.it	The layers are currently restricted. Available soon through the SID portal.
Slovenia	Maritime boundaries	Geopolitical boundaries (legal status)	National Border Record	Surveying and Mapping Authority of the Republic of Slovenia	31.01.2008	https://eprstor.gov.si/imps/srv/eng/catalog.search#/metadata/2270f9a6-178c-4a0e-989a-1b530b496722	
Slovenia	Physical characteristics	Oceanographic parameters	Oceanographic data and measurements	National institute of biology	everyday	https://www.nib.si/mbp/en/oceanographic-data-and-measurements	
Slovenia	Nature and species conservation sites & protected areas	National Protected Areas (marine and coastal)	Protected areas in Slovenia	Agency for environment Slovenia	10.08.2018	https://eprstor.gov.si/imps/srv/eng/catalog.search#/metadata/50a097f2-99d9-417b-8ca5-dce7051f181a	
Slovenia		National Protected Areas (marine and coastal)	Register of valuable natural features in Slovenia	Agency for environment Slovenia	20.07.2018	https://eprstor.gov.si/imps/srv/eng/catalog.search#/metadata/d965acad-3930-4828-b641-de36a9663f8e	
Slovenia		Natura 2000 sites (marine and coastal)	Natura 2000	Agency for environment Slovenia	20.07.2018	https://eprstor.gov.si/imps/srv/eng/catalog.search#/metadata/c93002fa-8064-4b7c-866b-2648ca1c403e	
Slovenia	Spatial policy	National coastal and marine planning	Generalized detailed dedicated use of space in Slovenia	Ministry responsible for spatial development	06.09.2016	https://eprstor.gov.si/imps/srv/slv/catalog.search#/metadata/c621af69-132f-47c0-80f0-0e03ad37ab12	
Slovenia		National coastal and marine planning	Slovenian marine spatial plan	Ministry for spatial development	17.07.2021	https://dokumenti-pis.mop.gov.si/javno/veljavni/PPP2192/index.html	
Slovenia		National coastal and marine planning	Bathing waters area	Water agency Slovenia	01.06.2008	https://eprstor.gov.si/imps/srv/eng/catalog.search#/metadata/c59d3885-c87a-4c9b-97c8-fccee4181691	
Slovenia		National coastal and marine planning	Areas supplying bathing waters	Water agency Slovenia	1.6.2008	https://eprstor.gov.si/imps/srv/eng/catalog.search#/metadata/8ecee21-92e5-4636-834f-f4f184c1ee9f	
Slovenia	Forecast	Weather	National weather portal	National Meteorological Service	everyday	https://meteo.arso.gov.si/met/en/weather/bulletin/coast/	
Slovenia		Sea state	National weather portal	National Meteorological Service	Daily	https://meteo.arso.gov.si/met/en/weather/bulletin/coast/	

Slovenia	Maritime transport and traffic flows	Governance and planning	Slovenian marine spatial plan	Ministry for spatial development	17.07.2021	https://dokumenti-pis.mop.gov.si/javno/veljavni/PPP2192/1/2_graficni_del/PPP_KARTA_01_OBMOCJE_PP	
Slovenia	Maritime transport and traffic flows	Maritime routes and areas	Slovenian marine spatial plan	Ministry for spatial development	17.07.2021	https://dokumenti-pis.mop.gov.si/javno/veljavni/PPP2192/1/2_graficni_del/PPP_KARTA_06_OBMOCJA_PO	
Slovenia	Submarine cable & pipeline routes	Pipelines	Slovenian marine spatial plan	Ministry for spatial development	17.07.2021	https://dokumenti-pis.mop.gov.si/javno/veljavni/PPP2192/1/3_priloge/prikaz_stanja_prostora/02_graficni_del	
Slovenia	Surveillance and security	Obstructions and wrecks	Slovenian marine spatial plan	Ministry for spatial development	17.07.2021	https://dokumenti-pis.mop.gov.si/javno/veljavni/PPP2192/1/3_priloge/prikaz_stanja_prostora/02_graficni_del	
Slovenia		Obstructions and wrecks	Legal regimes of cultural heritage	Ministry of culture Slovenia	29.06.2021	https://eprostor.gov.si/imps/srv/eng/catalog.search#/metadata/3873f3c0-03d9-4410-b730-4f72bd7c9bff	
Slovenia		SAR Zones	Slovenian marine spatial plan	Ministry for spatial development	17.07.2021	https://dokumenti-pis.mop.gov.si/javno/veljavni/PPP2192/1/2_graficni_del/PPP_KARTA_07_OBMOCJA_OB	
Spain	Maritime boundaries	Geopolitical boundaries (legal status)	Marine areas (LIMITES ADMINISTRATIVOS OFICIALES)	Spanish Government - Ministry of Defense Hydrographic Institute of the	30/09/1977	http://ideihm.covam.es/wms/limitesMAR	
Spain		Physiographic boundaries	Coastline	Spanish Government - Ministry of Defense Hydrographic Institute of the	30/09/2007	http://ideihm.covam.es/wms/costaspain?service=WMS&request=GetCapabilities	
Spain	Physical characteristics	Bathymetry	Batimetría del Talud Continental	Ministerio de Agricultura, Pesca y Alimentación	12/2021	https://www.mapa.gob.es/es/cartografia-y-sig/ide/descargas/pesca/talud-batimetria.aspx	Available only for a limited area, not for all the Mediterranean coast
Spain		Bathymetry	Batimetría de la Plataforma Continental	Ministerio de Agricultura, Pesca y Alimentación	11/2021	https://www.mapa.gob.es/es/cartografia-y-sig/ide/descargas/pesca/plataforma-batimetria.aspx	Available only for a limited area, not for all the Mediterranean coast
Spain		Sedimentology	Nature of the Seabed	Spanish Institute of Oceanography	Last revision: 22/06/20	http://barretosm.md.iao.es/arccgis/services/visorBase/Naturaleza_del_Fondo_Marino/MapServer/WMSServer?	
Spain	Maritime transport and traffic flows	Governance and planning	Marine reference information	Ministry of Transport, Mobility and Urban Agenda - SASEMAR	2016	http://www.infomar.miteco.es/visor.html	The information available in INFOMAR is for summer 2016. It is not updated regularly.
Spain		Maritime routes and areas	Shipping density		2016	http://infomar.cedex.es/cgi-bin/qgis_mapserv.fcgi?VERSION=1.3.0&map=&service=WMS&request=GetMap&layers=	http://www.infomar.miteco.es/visor.html
Spain		Governance and planning	Nautical charts	Spanish Government - Ministry of Defense Hydrographic Institute of the	31/12/2012	http://ideihm.covam.es/wms/catalogoPaper?service=WMS&request=GetCapabilities	
Spain		Maritime routes and areas	Traffic separation scheme	CEDEX	Before 2012	http://www.infomar.miteco.es/visor.html	Unofficial

Spain	Ports	Governance and planning	Ports	Puertos del Estado	05/09/2011	https://geoserver.puertos.es/wms-inspire/puertos?SERVICE=WMS&REQUEST=GetCapabilities&SERVICE=WMS&VERSION=1.0.0	The service was made available in 2021, but I do not know by when the information
Spain	Nature and species conservation sites & protected areas	Natura 2000 sites (marine and coastal)	Natura 2000 Areas	Ministry for Ecological Transition and Demographic Challenge	12/2021 (Updated every year)	https://wms.mapama.gob.es/sig/Biodiversidad/RedNatura/wms.aspx	
Spain		National Protected Areas (marine and coastal)	Marine Protected Areas (RAMPE)	Ministry for Ecological Transition and Demographic Challenge	08/2021	https://www.miteco.gob.es/es/cartografia-y-sig/ide/descargas/biodiversidad/rampe.aspx	
Spain		National Protected Areas (marine and coastal)	Protected Sites (National and Regional management)	Ministry for Ecological Transition and Demographic Challenge		http://www.infomar.miteco.es:8080/geonetwork/srv/eng/catalog.search#/metadata/d2f168bd-c0ba-4087-a772-29f13b397b06	
Spain		National Protected Areas (marine and coastal)	OSPAR Sites	Ministry for Ecological Transition and Demographic Challenge		http://www.infomar.miteco.es:8080/geonetwork/srv/eng/catalog.search#/metadata/d1d35488-2c38-4288-a463-359165bfff122	
Spain	Submarine cable & pipeline routes	Telecommunication	Cables	Spanish Government - Ministry of Defense Hydrographic Institute of the	02/2022	http://www.infomar.miteco.es/visor.html	Restricted, INFOMAR shows approximated location only.
Spain		High Voltage Cables	Cables	Red Eléctrica de España	02/2022	http://www.infomar.miteco.es/visor.html	Restricted, INFOMAR shows approximated location only.
Spain		Pipelines	Gas pipeline	Ministry for Ecological Transition and Demographic Challenge and Enagás	10/2019	http://www.infomar.miteco.es/visor.html	Restricted, Infomar shows approximated location only
Spain	Forecast	Weather	Wind	Puertos del Estado	Updated frequently	https://www.puertos.es/es-es/oceanografia/Paginas/portus.aspx	It is a viewer, historical data are provided under request
Spain		Sea state	Waves, currents, temperature, salinity	Puertos del Estado	Updated frequently	https://www.puertos.es/es-es/oceanografia/Paginas/portus.aspx	
Spain		water levels	Sea level	Puertos del Estado	Updated frequently	https://www.puertos.es/es-es/oceanografia/Paginas/portus.aspx	
Spain	Surveillance and security	SAR Zones	SAR Zones	CEDEX	Before 2012	http://www.infomar.miteco.es/visor.html	Unofficial
Spain		Beaconing	Lighthouses and fog signals	Spanish Government - Ministry of Defense Hydrographic Institute of the	31/12/2012	http://ideihm.covam.es/wms/lucesIHM?request=GetCapabilities&service=WMS	http://ideihm.covam.es/wms/lucesIHM

